THE RANGE OF POLYGYRA AND OF GONIOBASIS IN CALIFORNIA

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In a recent paper on Molluscan Provinces in the Western United States (Univ. Colo. Studies, XVIII, 183, 1931), I inadvertently made the somewhat misleading statement that *Polygyra* and *Goniobasis* are absent from the Californian Province, which was said to comprise "most of California". The map placed the dividing line a long way north of San Francisco Bay. Perhaps it would be better to draw it much nearer the Bay. However, as I explained, it is impossible to draw definite lines to separate molluscan provinces where there are no sharp, definite physical or environmental barriers, because of the geographical overlap of important groups in such regions. In the case of California the zone of overlap or transition is several hundred miles wide as shown by a study of such genera as *Margaritifera, Gonidea, Helminthoglypta, Micrarionta, Monadenia, Polygyra, Goniobasis* and others, all of which must be considered, not any one genus alone. Nevertheless, even if the line should be moved much farther south, *Polygyra* would still extend well south into the Californian Province, as it has been long known to range at least as far south as San Luis Obispo County.

I have found no *Goniobasis* south of San Francisco Bay, and have seen none from that region in other collections. *G. circumlineata* Tryon was described as from "Mission San Antonio, Cal.; Shasta Co., Cal. W. Newcomb. Pitt River, Cal. Dr. J. S. Newberry. Feather River, Cal. J. H. Thomson." Mission San Antonio de Padua, the only Mission San Antonio in California of which I have found a record, is in Monterey County. This is almost certainly not the type locality. Cooper gave the range of this form as from San Antonio Creek in Marin County to Pitt River, in his geographical catalogue published by the California Mining Bureau. That Bureau's geological map, by J. P. Smith, shows a creek by that name, draining into the north end of Tomales

Bay, but on the Point Reyes sheet of the U. S. Geological Survey it is called Walker Creek. Both maps show the San Antonio Creek which heads up toward Tomales Bay and flows southeastward into San Pablo Bay, forming the northeastern boundary of Marin County. Last July the bed of this creek was entirely dry where the main north-south highway crosses it, and farmers there told us that there was no water up the creek, so we did not go up. In crossing from Petaluma to Point Reyes we found no *Goniobasis*. Dr. G. D. Hanna has furnished me the following statement:

"It is very unlikely that *G. circumlineata* came from the Mission in Monterey County, on the San Antonio River. There are many San Antonio Creeks in the state and the one cited by Cooper may be the original locality; there is a vague report that a chapel was established at one time on the San Antonio Rancho at the head of the creek, but this has not been confirmed. There is another San Antonio Creek, a branch of Alameda Creek, which discharges into the southeast end of San Francisco Bay. This creek is approximately four miles from Mission San José. Since Newcomb lived on the east side of the Bay, this locality seems plausible. This begins to look like just another one of those many indefinite localities we will have to worry about for years. The southernmost record for *Goniobasis* in our collection and in Mr. Allyn G. Smith's collection is Salmon Creek, which flows into the Pacific Ocean at the extreme southwest corner of Sonoma County."

The objection to the creek near Mission San José as the type locality is that no one seems to have found any *Goniobasis* anywhere near there since *circumlineata* was published. There is a San Antonio Creek southeast of Palo Alto, as shown on the U. S. Geological Survey topographic sheet, but last summer the bed of the creek was dry where we examined it, and so far as I have learned no one ever found any *Goniobasis* anywhere near that locality. In travelling northward from San Francisco Bay, our first encounter with this genus was about six miles north of Santa Rosa, though we have specimens from Occidental, obtained by Mr.

E. P. Chace. It seems very probable that Sonoma County, or perhaps Marin County, is the present southern limit of the genus in California, though fossil species have been reported from far to the southeast.

NEW SPECIES AND VARIETIES OF HELISOMA AND GYRAULUS FROM CANADA[1]

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Recently, a large collection of Canadian mollusks was received by the Natural History Museum from Dr. A. R. Cahn which probably included the largest aggregation of forms referred to *Helisoma corpulentum* ever studied by a conchologist. All ages were represented. A study of this material shows that the group is composite, including several species and races, and that certain forms which have been referred to other species were incorrectly placed, and represent new forms or belong to recognizable older names. The whole question of the variation of the Canadian species of the *trivolvis-corpulentum* group will be discussed in a paper to appear in the Canadian National Museum report, in which the new forms will be figured. Diagnoses only of the new forms are given in this paper.

HELISOMA CORPULENTUM (Say).

Planorbis corpulentus Say, Long's Exped., II, p. 262, pl. xv, fig. 9, 1924.

In his description of *P. corpulentus* Say mentions the coarse wrinkles of the sculpture which he calls "rugged". Specimens from one of the type localities, Rainy Lake, exactly correspond with this description and may be taken as typical. This form is common in many lakes in Ontario, especially in Rainy Lake region. The rib-like wrinkles are about one millimeter apart. Adult specimens of the size of Say's figured specimen are in the Canadian collections.

[1] Contribution from Natural History Museum, University of Illinois, No. 69.